

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number  
WO 2004/047153 A3

(51) International Patent Classification<sup>7</sup>: H01L 31/052, 31/04

(74) Agent: MORTENSON, Mark, G. The Law Offices of Mark G. Mortensen; Post Office Box 310, North East, MD 21901-0310 (US).

(21) International Application Number:  
PCT/US2003/037198

(81) Designated States (*national*): AE, AG, AL, AU, BB, BG, BR, BW, CA, CN, CO, CR, CU, CZ, DM, DZ, EC, EE, EG, GD, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LS, LT, MA, MG, MK, MX, NZ, PL, RO, SG, SK, TR, TT, UA, UG, US, UZ, VC, YU, ZA.

(22) International Filing Date:  
20 November 2003 (20.11.2003)

(25) Filing Language: English

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(26) Publication Language: English

(30) Priority Data:  
60/428,119 20 November 2002 (20.11.2002) US

(71) Applicant (*for all designated States except US*): BERKSHIRE LABORATORIES, INC. [US/US]; 864 Morrison Road, Columbus, OH 43230 (US).

Published:  
— with international search report

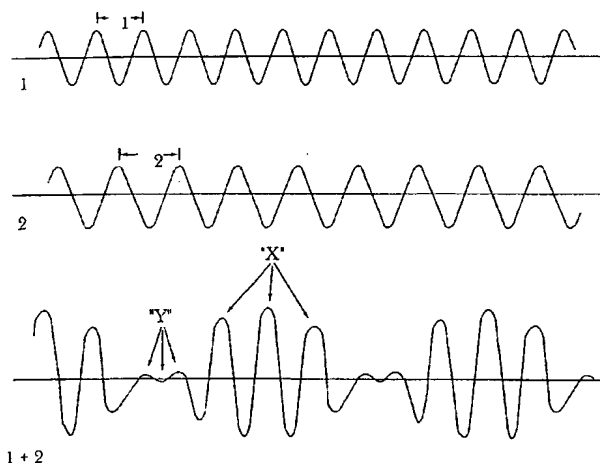
(88) Date of publication of the international search report:  
12 August 2004

(72) Inventor; and

(75) Inventor/Applicant (*for US only*): MORTENSON, Mark, G. [US/US]; 105 Deer Path Lane, North East, MD 21901 (US).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: HIGH EFFICIENCY SOLAR CELLS



(57) Abstract: The present invention relates to improvements in solar cell and solar panel photovoltaic materials which cause the solar cells/panels to operate more efficiently. In particular, the present invention focuses primarily on matching or modifying particular incident light energies within the photoreactive portion of the solar spectrum to predetermined energy levels in a solar cell photovoltaic substrate material required to excite, for example, electrons in at least a portion of the substrate material in a desirable manner. The portions (X) and (Y) represent areas where the two waves (1) and (2) have at least partially constructively interfered, and partially destructively interfered, respectively. Depending upon whether the portion (X) corresponds to desirable or undesirable wavelengths, the portion (X) could enhance a positive or negative effect in the substrate material. Similarly, the portion (Y) may correspond to the effective loss of either a positive or negative effect.

WO 2004/047153 A3